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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/964,441	09/28/2001	Takahisa Yamashiro	3777-0102P	1566

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EXAMINER

DOUGHERTY, THOMAS M

ART UNIT PAPER NUMBER

2834

DATE MAILED: 03/28/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/964,441

Applicant(s)

YAMASHIRO ET AL.

Examiner

Thomas M. Dougherty

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 September 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 8-15 and 18-20 is/are rejected.
- 7) ☒ Claim(s) 6, 7, 16 and 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 September 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 9, 11-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 9 expresses goals of the invention without a corresponding structure which would allow the expressed goals to be achieved. There only two components extant in the body of the claim, one a power supply and the other a passive element. In claim 12, no proper antecedent basis has been found for said passive element. In claim 13, it is not clear how the switching transistor is connected to the other components. In claims 14 and 15, it is not understood what the regulating means is. How are the resonance and anti-resonance frequencies regulated?

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Fastenemeie et al. (EPO 0173761). The reference shows (fig. 1) an ultrasonic cleaning apparatus which cleans a subject to be cleaned by utilizing oscillation generated by an ultrasonic oscillator, comprising: a power amplifier (16) for amplifying an amplitude of a

signal to supply the signal as power to said ultrasonic oscillator; a detector (1) for detecting a state of said ultrasonic oscillator; and a controller (15) for controlling a frequency of said signal depending on an output detected by the detector. It is unclear what the power supplied to the ultrasonic oscillator may be. This however is not further limiting to the claimed structure and therefore carries no patentable weight. Said detector (1) is a phase comparator for obtaining a difference between a phase of a current flowing through said ultrasonic oscillator and a phase of a voltage applied to said ultrasonic oscillator and for generating the voltage in accordance with the phase difference. Said controller (15) is a voltage control oscillation device for generating a signal having a frequency in accordance the voltage generated by the phase comparator and for controlling said phase difference within a predetermined range. That being the range that ensures "maximum power transfer and stability in powering ultrasonic transducer in cleaning ...".

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4, 5, 10 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fastenemeie et al. (EPO 0173761) in view of Haring (DE 40 35 828 A1). Given the invention of Fastenemeie et al. as noted above, they don't disclose that their voltage control oscillation device keeps said phase difference within $\pm 30\%$ or show

an ultrasonic phone for amplifying an oscillation speed jointed to said ultrasonic oscillator where the maximum value of an oscillation speed at a tip of the ultrasonic phone (a Langevin type device) is set to a range from 1m/s to 10m/s. Haring shows (fig. 2) an ultrasonic cleaning apparatus which cleans a subject to be cleaned by utilizing oscillation generated by an ultrasonic oscillator, comprising: a detector (9) for detecting a state of said ultrasonic oscillator; it is unclear what the power supplied to the ultrasonic oscillator may be. This however is not further limiting to the claimed structure and therefore carries no patentable weight. Said detector (9) is a phase comparator for obtaining a difference between a phase of a current flowing through said ultrasonic oscillator and a phase of a voltage applied to said ultrasonic oscillator and for generating the voltage in accordance with the phase difference. He further shows an ultrasonic phone (18, he shows a Langevin type device) for amplifying an oscillation speed jointed to said ultrasonic oscillator. Haring doesn't show an explicit a power amplifier for amplifying an amplitude of a signal to supply the signal as power to said ultrasonic oscillator. He doesn't show a controller for controlling a frequency of said signal depending on an output detected by the detector. The maximum value of an oscillation speed at a tip of the ultrasonic phone is unknown. It would have been obvious to one having ordinary skill in the art to employ the ultrasonic phone of Haring in the device of Fastenemeie et al. at the time of their invention since this is a well-known application of such devices as is shown by Haring. Regarding the phase difference limitation of +30% and the frequency limitation of the ultrasonic phone, neither of these further limits the claimed structure, but are however goals of the

invention. Additionally regarding the method claims 18-20, it is well within the skill of a routineer in the art to so drive the device using the values selected for power, phase range and frequency, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Allowable Subject Matter

Claims 6, 7, 16 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to show or fairly suggest a state machine which decides whether a load is applied to the oscillator or not in an ultrasonic cleaning apparatus structured as described in the parent claims of claims 6 and 7. Additionally, a passive element has not been shown or suggested by the prior art which art is applicable to claim 1 on which claims 16 and 17 depend.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The remaining prior art reads on some aspects of the Applicants' claimed invention.

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It is not yet clear whether the claims rejected solely under USC 112, second paragraph will eventually be considered allowable. The lack of structure in some claims and the lack of proper antecedent basis in others renders the claims so indefinite that art cannot be applied against them at this time. When they are made definite a consideration of their relationship to the prior art may be made.

Direct inquiry concerning this action to Examiner Dougherty at (703) 308-1628.

tmd

March 25, 2002


THOMAS M. DOUGHERTY
PRIMARY EXAMINER
GROUP 2100
